

Message Text

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FM SECSTATE WASHDC

TO AMEMBASSY ALGIERS

C O N F I D E N T I A L STATE 140274

E.O. 11652: GDS

TAGS: ENRG, AG

SUBJECT: ALGERIAN OIL PRODUCTION

REF: ALGIERS 1274

1. REFTEL REQUESTED GEOLOGICAL COMMENTS ON EFFECT OF GAS BUBBLE-OFF OF HASSI-MESSAOUD OIL FIELD. THE FOLLOWING INFORMATION WAS PROVIDED BY A FORMER EMPLOYEE OF A MAJOR OIL FIRM WITH EXTENSIVE PRODUCTION EXPERIENCE.

2. REFTEL SUGGESTS THAT IN CERTAIN PORTIONS OF THE LARGE HASSI-MESSAOUD OIL FIELD, MOST OF THE OIL RECOVERABLE BY PRIMARY MEANS MAY HAVE BEEN EXTRACTED. THIS OIL RESERVOIR HAS NEITHER EXPANDING GAS CAP DRIVE (FROM ABOVE) NOR ANY NOTICEABLE WATER DRIVE (FROM BELOW) TO MAKE THE OIL FLOW NATURALLY. INSTEAD, THE PRIMARY FLOW MECHANISM
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IS DISSOLVED GAS WHICH CAUSES THE OIL TO EXPAND. THIS

OIL/GAS FROTH WILL FLOW AS LONG AS THE OIL/GAS STAYS IN SOLUTION. WHEN A WELL BEGINS TO "BUBBLE-OFF", THIS MEANS THAT SOME OF THE GAS IS PASSING OUT OF SOLUTION, SEPARATING FROM THE OIL, AND ESCAPING UP THE WELL WITHOUT BRINGING OIL WITH IT, THEREBY RAISING THE GAS/OIL RATION. WHEN THE CRITICAL "BUBBLE-POINT" PRESSURE LEVEL IS REACHED,

ONLY GAS RISES TO THE WELL, LEAVING THE REMAINING OIL IN THE GROUND.

3. AFTER DISCOVERING THE HASSI-MESSAOUD FIND IN 1957, A FRENCH GEOLOGIST ESTIMATED THAT NO MORE THAN 10 PERCENT OF THE ORIGINAL OIL-IN-PLACE COULD BE RECOVERED BY THIS RELATIVELY INEFFICIENT RESERVOIR DRIVE. GAS CAP AND /OR WATER DRIVE FIELDS PERMIT RECOVERIES OF 20-30 PERCENT OF OIL-IN-PLACE.

4. REFTTEL'S SOURCE IS CORRECT WHEN HE SAYS THAT PRODUCTION SHOULD BE REDUCED UNTIL PRESSURE PROBLEM IS RESOLVED IN ORDER TO AVOID DAMAGING OVERALL RECOVERY OF FIELD. WHEN FEASIBLE, REPRESSURING WITH GAS OR WATER USUALLY PROLONGS THE ECONOMIC LIFE OF WELLS. HOWEVER, INJECTION OF GAS AND/OR WATER MAY NOT PROVIDE ADEQUATE REPRESSURING OF EXISTING STRATA IN THE HASSI-MESSAOUD FIELD. THE FRENCH GEOLOGIST CITED EARLIER REPORTED THAT THE HORIZONTAL CHANGES IN THE ROCK PERMEABILITY OF THIS CAMBRIAN-AGE SANDSTONE RESERVOIR ARE GREATER THAN THE VERTICAL CHANGES. THIS MEANS THAT EFFORTS TO REPRESSURE WOULD BE INHIBITED AND WOULD PROBABLY RESULT IN UNEVEN AND UNPREDICTABLE MOVEMENT OF OIL FROM THE INJECTION WELL TO THE PRODUCING WELLS, THEREBY REDUCING RECOVERY LEVELS.

5. THE BUBBLING-OFF PROBLEM COULD CAUSE SUBSTANTIAL REDUCTION IN HASSI-MESSAOUD PRODUCTION. HOWEVER, ONE CANNOT DETERMINE THE EXTENT TOTAL RECOVERY WOULD BE AFFECTED WITHOUT KNOWING HOW FAR THE PRESSURE HAS DECLINED IN EACH WELL THROUGHOUT THE FIELD. KISSINGER

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